## AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A process for inhibiting misincorporation of a terminator in a single base primer extension reaction, comprising:

~~providing~~ amplifying a nucleic acid template in the absence of inorganic pyrophosphatase to yield a product of a nucleic acid synthesis reaction, the product comprising ~~a nucleic acid template~~ an amplification product and a quantity of inorganic pyrophosphate;

incubating the product of a nucleic acid synthesis reaction and an inorganic pyrophosphatase under conditions sufficient to decrease the quantity of inorganic pyrophosphate, to yield a purified reaction product;

combining the purified reaction product, a primer, a terminator having a detectable label, and a polymerase to form a mixture; and

incubating the mixture under conditions sufficient to extend the primer by addition of the terminator in a single base primer extension reaction, wherein decreasing the quantity of inorganic pyrophosphate in the product of a nucleic acid synthesis reaction inhibits pyrophosphorolysis in the single base primer extension reaction, so as to inhibit misincorporation of a terminator.

2. (Original) The process of claim 1 wherein the nucleic acid synthesis product further comprises a residual reaction component selected from the group consisting of: a residual primer and a nucleotide.

3. (Previously Presented) The process of claim 2 further comprising:

adding an enzyme selected from the group consisting of: an exonuclease, an alkaline phosphatase, and a combination thereof to the nucleic acid synthesis product; and

incubating the nucleic acid synthesis product and enzyme under conditions sufficient to degrade the residual reaction component.

4. (Previously Presented) The process of claim 2 further comprising:

adding an enzyme selected from the group consisting of: an exonuclease, an alkaline phosphatase, and a combination thereof to the purified reaction product; and

incubating the purified reaction product and enzyme under conditions sufficient to degrade the residual reaction component.

5. (Previously Presented) The process of claim 3 further comprising:

inactivating the enzyme.

6. (Previously Presented) The process of claim 1 further comprising inactivating the inorganic pyrophosphatase.

7. (Original) The process of claim 1 wherein the detectable label is a fluorescent label.

8. (Canceled)

9. (Previously Presented) The process of claim 1 further comprising detecting the detectable label.

10. (Original) The process of 9 wherein the step of detecting the label comprises detection of fluorescence polarization.

11-12. (Canceled)

13. (Previously Presented) The process of claim 3 wherein the alkaline phosphatase is selected from the group consisting of: bacterial alkaline phosphatase, calf intestinal alkaline phosphatase and a combination thereof.

14. (Previously Presented) The process of claim 3 wherein the alkaline phosphatase is shrimp alkaline phosphatase.

15. (Previously Presented) The process of claim 3 wherein the exonuclease is selected from the group consisting of: lambda exonuclease, mung bean exonuclease, Bal31 exonuclease, T7 exonuclease and a combination thereof.

16. (Previously Presented) The process of claim 3 wherein the exonuclease is exonuclease I.

17. (Canceled)

18. (Original) The process of claim 1 wherein the polymerase is a thermostable polymerase having a greater affinity for an acyclo nucleoside terminator than for a dideoxyterminator.

19-20 (Canceled)

21. (Original) The process of claim 1 wherein the steps are performed in a single reaction container.

22. (Canceled)

23. (Original) The process of claim 1 wherein the terminator is an acyclo nucleoside terminator.

24. (Canceled)

25. (Canceled)

26. (Currently Amended) A process for inhibiting misincorporation of a terminator in a single base primer extension reaction, comprising:

~~providing~~ amplifying a nucleic acid template in the absence of inorganic pyrophosphatase to yield a product of a nucleic acid synthesis reaction, the product comprising ~~a nucleic acid template~~ an amplification product and a quantity of inorganic pyrophosphate;

incubating the product of a nucleic acid synthesis reaction and a pyrophosphate removing enzyme under conditions sufficient to decrease the quantity of inorganic pyrophosphate, to yield a purified reaction product;

combining the purified reaction product, a primer, a terminator having a detectable label, and a polymerase to form a mixture; and

incubating the mixture under conditions sufficient to extend the primer by addition of the terminator in a single base primer extension reaction, wherein decreasing the quantity of inorganic pyrophosphate in the product of a nucleic acid synthesis reaction inhibits pyrophosphorolysis in the single base primer extension reaction, so as to inhibit misincorporation of a terminator.

27. (Original) The process of claim 26 wherein the nucleic acid synthesis product further comprises a residual reaction component selected from the group consisting of: a residual primer and a nucleotide.

28. (Previously Presented) The process of claim 27 further comprising:

adding an enzyme selected from the group consisting of: an exonuclease, an alkaline phosphatase, and a combination thereof to the nucleic acid synthesis product; and

incubating the nucleic acid synthesis product and enzyme under conditions sufficient to degrade the residual reaction component.

29. (Previously Presented) The process of claim 27 further comprising:

adding an enzyme selected from the group consisting of: an exonuclease, an alkaline phosphatase, and a combination thereof to the purified reaction product; and

incubating the purified reaction product and enzyme under conditions sufficient to degrade the residual reaction component.

30. (Previously Presented) The process of claim 26 further comprising inactivating the pyrophosphate removing enzyme.

31-63. (Canceled)